Descriptions of new species of Fresh Water Mollusca, from Panama. By Geo. W. Tryon, Jr.

Description of a new Exotic Melania. By G. W. Tryon, Jr.

Descriptions of new species of fresh water Mollusca, &c. By Geo. W. Tryon, Jr.

Notes on the Birds of Jamaica. By W. T. March, with remarks, by S. F. Baird.

On a third kingdom of organized bodies. By T. B. Wilson, M. D., and John Cassin.

Descriptions of fourteen new species of Melanidæ and one Paludina. By Isaac Lea.

May 26th.

The President, MR LEA, in the Chair.

Nineteen members present.

On Report of the respective committees, the two papers of Mr. Lea, read May 12th, were ordered to be published in the Journal, and the following were ordered to be published in the Proceedings:

On a Third Kingdom of Organized Beings.

BY THOMAS B. WILSON, M. D., AND JOHN CASSIN.

The classification of the lower forms of organized beings, on the assumption that they ought to be assigned to either the animal or the vegetable kingdom, has presented difficulties to naturalists which have proved insurmountable. The position of entire groups remains, apparently, as uncertain and undetermined in this respect as it ever was, and the conclusions and opinions of authors are so various that it is palpable that no considerable approach has been made to the solution of the questions involved, notwithstanding much very careful and accurate investigation and patient research. The difficulty probably originates in the first assumption, that all organized or living beings are referable to two great groups only, an assumption and presupposition of almost universal prevalence, but in which men of science seem to have been contented to adopt popular belief and to accept the usual and popular application of language. There are, very probably, three kingdoms or great primary groups of organized beings, as distinct from each other as any subordinate groups and as readily defined by valid and recognizable characters.

Whatever may be the solution, ultimately, of the very important questions relating to the primary, and at present unknown, principles under which the normal and inherent forces of Nature first assume that mysterious tension or condition, of which life is the immediate result, it is evident and unmistakable that this extraordinary tension manifests itself and operates under such controlling laws that its results are determinate and uniform. Taking on themselves isolation from the great mass of inorganic Nature, though temporarily only, these forces assume developments which are circumscribed and specific, though evidently progressive and modified under circumstances coincident with and dependent upon the laws or conditions of existence of organic life in any geologic period. It has hitherto been assumed, apparently, that from a point of the first manifestation of life, its progress of evolution or development is into two series or great classes of existences,—animal and vegetable,—or perhaps into one series only, according to the hypotheses of the older authors, regarded as the chain of being, from the lowest vegetable to

the highest animal. In our opinion it may be demonstrable, that the first assumption of life manifests itself in objects constituting a primary great class or kingdom of more simple organization than either the animal or vegetable kingdom, and possessing also an equally characteristic specialization in its structure and functions.

The consideration of the question of determinable characters on the assumption of the existence of two primary divisions or kingdoms only may now safely be regarded as exhausted, without conclusive result or an approximation to such, sufficient even to obtain general adoption temporarily as a probable antecedent hypothesis, awaiting demonstration. Much has been attempted and numerous propositions and theoretical definitions have been thoroughly canvassed, to the end only of showing their insufficiency. Voluntary motion and permanent fixedness, the presence or absence of nitrogen, internal or external stimuli, the differences in the method and substances of nutrition, and many other problems have, in their attempted solution, failed to give the desired formula, and there are those who may be presumed to be well acquainted with all the researches touching questions here alluded to, who infer summarily that there is no difference radically, or in the lowest forms of organization in the two kingdoms *Animalia* and *Vegetabilia*, as almost universally supposed to be constituted. As an example, we cite the distinguished botanist Professor Lindley, of London, who says, in the Introduction to his standard and well known work on the Natural System of Botany, "Plants are not separable from animals by any absolute character, the simplest individuals of either kingdom not being distinguishable by our senses," (p. 15, New York, 1831). Of a somewhat similar tenor, but with an implication more in accordance with our views on this hitherto intricate subject, is an observation by Professor Owen, of the British Museum: "Nothing seems easier than to distinguish a plant from an animal, and in common practice, as regards the more obvious members of both kingdoms, no distinction is easier; yet, as the knowledge of their nature has advanced, the difficulty of defining them has increased, and seems now to be insuperable." (Hunterian Lectures, p. 2, London, 1855.)

Inthe higher developments of the animal and vegetable kingdoms there is truly the utmost possible readiness of distinction,and this great facility seems to have led to an inference that the same readiness and facility ought to prevail throughout the two supposed kingdoms. "At first sight," says Professor Van der Hœven, "it seems easy to distinguish an animal from a plant, and even the most unskilled person thinks he has a clear notion of the difference. Yet it is just his want of knowledge that causes the difference to appear so prominent, whilst he overlooks the intermediate links, and thinks, for instance, of a dog and a pear tree," (Handbook of Zoology, i. p. 4, Cambridge, 1856). We do by no means admit, however, that the principle here implied and apparently involved, which seems to be that the higher groups of any grade, whether kingdoms or other, are more easily recognizable and definable than the lower, is correct. The truth is, very probably, that the lower forms in all groups, are, at least, as readily to be assigned to their proper positions in the natural system as the higher; possibly more so, in some instances. In the two kingdoms, *Animalia* and *Vegetabilia*, there is no difficulty with forms properly belonging to either of them, and of either high or low grade of development. The difficulty and, in fact, impossibility hitherto has been with organizations inferior to both, and properly belonging to neither. Though in an early zoological epoch the corals and other groups may have been regarded as of doubtful status, there is at present no group in either the animal or vegetable kingdom, rightly defined, which, in our opinion, presents any doubt or difficulty in its being assigned to either one or the other, and, probably, very generally, nearly correctly according to its actual or relative characters and its affinities.

There are clearly recognizable characters distinguishing the two primary divisions, or first duality of natural productions, organic and inorganic bodies, or, as Linnæus judiciously terms them, *corpora organisata* and *corpora congesta*, and all the subordinate groups and species of either, necessarily possess characters in common, though exhibiting themselves in degrees of modifications vastly diversified and numerous. In the former, or great organic division, the definition of the common characters are of course implied in the term organic, and on the degrees and modifications of organization, whether indicating what may be termed higher or lower development; whether clearly marking or only obscurely indicating inferior groups of whatever grade or value; or whether presenting very prominent or very obscure modifications, with or without apparent object or relations—on these degrees or modifications of organization or structure rest all classification, and all the great primary facts of independent existences, as presented to the human faculties, whether of observation or reason. We hold it to be altogether probable, and perhaps demonstrable, that all groups, of whatever grade or position, possess positive or relative characters dependent on, and exponating their degree of organization, and which characters absolutely establish and advertise their status in Nature. We hold, too, that all such groups admit of description, and equally absolute or relative definition in language. Such is, and has always been, the practical faith of naturalists, whatever their theories, the accuracy of their observations, the extent and precision of their knowledge, or their deficiencies in either, and this faith is very probably quite truthful, and immutably founded on one important aspect of the relations of the external universe to the human mind, mutually questioning and responding, calling to each other and answering gladly, as it were, like an echo. All the processes of naturalists, systematic or descriptive, are based on the assumption of the practicability of definition, and of groups, and of species alike. Any other course, or any other assumption, would be assuredly unreasonable and illogical, and destructive to the advancement of knowledge and of science. "We must trust the perfection of the Creation so far," says a distinguished author, "as to believe that whatever curiosity the order of things has awakened in our minds, the order of things can satisfy." (Nature, an Essay, by R. W. Emerson.)

The organization of all beings, of which life is the essential character, seems to present three very distinct grades or specializations of development, and apparently indicates a classification based on such specialized development or the characteristic organs and functions of each grade. In our opinion the specialized organs and functions in each of these grades of development present sufficient and exclusive characters, admitting of being defined and applied readily as the real characteristics of three great primary divisions or kingdoms of Nature. The term, specialized, has been used by Professor Owen with reference to the two kingdoms, Animal and Vegetable, and in nearly the same sense that it is used by us. He says, most truly: "But the two divisions of organisms, called 'plants' and 'animals,' are specialized members of the great natural group of living things." (Palæontology, p. 4.) The three great groups which we hold to be the primary divisions or kingdoms of organic life, present, essentially as characters or specializations of development, the prominence, or dominant prevalence of the Reproductive System, the Nutritive System and the Nervous System and their functions.

The organs and corresponding functions which seem to characterize these three kingdoms, and to become specialized and dominant in the organization of each, are as follows:

1. Organs for the continuation of the species, the function of which is Reproduction.

2. Organs for the preservation of the individual, the function of which is Nutrition.

3. Organs for external relations and self-consciousness, the function of which is Sensation.

The Reproductive and Nutritive functions are common to all organized beings, and so, probably, also is the Sentient function, though manifesting itself only in an incipient or rudimentary manner. The Reproductive function, however, beginning with mere cellular conjugation, becomes specialized first in a great group of organized beings of more simple structure than either Vegetables or Animals, which we regard as eminently and demonstrably a primary division or kingdom, and apply to it the name *Primalia*. In this kingdom organs of Reproduction are temporarily formed, and no other. In the *Vegetabilia*, those organs become of greatly increased importance, though not permanent, and in the *Animalia* they present a still higher organization, and in the higher sub-kingdoms attain permanency of structure.

The Nutritive function, beginning also in the cellular structure of our kingdom *Primalia*, is in that group quite rudimentary, so far as relates to specialization of organs, but in the kingdom *Vegetabilia*, this function and the organs performing it, especially the organs of respiration and circulation, become specialized and assume an extraordinary degree of development. Ascending to the kingdom *Animalia*, the organs of Nutrition become more numerous and more highly organized in their structure, but the organs of Respiration are not developed to such extent as in the *Vegetabilia*.

That the Sentient function is also common to all organized bodies is presumable, or to be inferred only, from the fact that it is manifested in greater or less degree in the two first kingdoms, *Primalia* and *Vegetabilia*, in sensibility to light, to thermal or to meteorological influences, and occasionally to other external influences. It is, however, generally held by Anatomists, but not without exception, that no organs of sensation are demonstrable in either our group, *Primalia*, or in the *Vegetabilia*. In the kingdom *Animalia*, and in that kingdom only, these organs are palpably most highly developed and specialized in the Nervous System. We recapitulate our views in the form of a corollary:

1. The Reproductive organs are first specialized in the kingdom *Primalia*.
2. The Nutritive organs are first specialized in the kingdom *Vegetabilia*.
3. The Sentient organs are first specialized in the kingdom *Animalia*.

The possession of an organization exclusively providing for Nutrition and Reproduction characterizes the first and most simple forms of life. This organization for Nutrition and Reproduction, and these functions only, is the especial character of the first of the three primary divisions or kingdoms of organized beings, the kingdom which we have named *Primalia*. In that group there are no other organs than those performing the function of Reproduction, and the structure is exclusively cellular without vascularity; or, perhaps it may be more properly stated to consist of mere unicellular aggregation. The possession of organs for, and the first development of the function of Reproduction is the specialization of this kingdom.

The next great division or kingdom is marked by the high development of the organs performing the functions of Nutrition and the superposition or superaddition of organs providing for the co-operative or identical functions of Respiration and Circulation. The possession of organs providing for Nutrition and Reproduction, Respiration and Circulation, and these only, characterizes the great group of Vegetables or kingdom *Vegetabilia*. In this group the vascular structure appears for the first time and continues to characterize it in all its modifications. The possession of organs for performance of the function of Nutrition in its highest development is the specialization of the kingdom *Vegetabilia*.

The last or most highly organized kingdom presents an exclusive and pecu-

liar character in the nervous system and its sphere of functions, embracing all the operations and relations of the senses and of the muscular system, superadded to the organs and the functions of the two preceding groups. The possession of organs for Nutrition and Reproduction, Circulation and Respiration, and for Sentiency, Voluntary motion, and all other functions and relations of the Nervous System, characterizes the great kingdom *Animalia*. Its specializations is the possession of and the high development of the Nervous System.

In imitation of the Linnæan formula these three kingdoms may be characterized as follows:

ANIMALIA, corpora organisita, generantia, spirantia et sentientia.

VEGETABILIA, corpora organisita, generantia, spirantia, *non sentientia*,

PRIMALIA, corpora organisita, generantia, *non spirantia, nec sentientia*.

As above intimated, the difficulty in the hitherto attempted definitions and in the systematic arrangement of the kingdoms *Animalia* and *Vegetabilia*, on the antecedent supposition that these two kingdoms ought to include all organisms that now exist, or have ever existed, has arisen from the impossibility of incorporating indisputably into either, many of those belonging to our third kingdom, *Primalia*. It is composed of orders and classes of existences, of which some have been very generally assigned to the Animal, and others to the Vegetable kingdom; and others again which have been variously and doubtfully regarded as belonging to one or the other. All organisms included in this kingdom are of cellular structure only, and possess the functions of Nutrition and Reproduction, as above defined, and no other; and all the groups properly of this kingdom are, in our opinion, readily demonstrable, as having a greater degree of relationship to each other than to any groups whatever in the other two kingdoms. This circumstance is held, very properly, as of the first importance in all classifications. With this first, but quite independent great group recognized and understood, there is, very probably, no difficulty whatever in readily defining not only the three great groups of organized beings, existing in Nature, but all subordinate groups belonging to either. We regard our third group as a Kingdom, and of the same rank or grade in classification as the two great groups which are universally admitted by naturalists under that designation.

It is now a matter of common information to men of science that all organized existences are composed of, and resolvable ultimately, by anatomical and microscopical analysis, into cells, and that the cellular structure prevails as a primary form or basis of organization alike in the most simple and in the most complicated organisms. Those cells seem to be the very first forms of organization and life, and possess a singularly independent vitality and power of increase or reproduction, whether isolated, or nearly so, or existing in any amount or form of aggregation in the higher vegetables or animals. They seem to be even capable of assuming, or re-assuming, individual and independent existence after having been previously and originally merged or aggregated in the vascular structure of the two higher kingdoms, *Vegetabilia* and *Animalia*, as well as in the lower non-vascular kingdom, *Primalia*. This seems to be the case in what are termed animal and vegetable infusions.

The organisms constituting the kingdom *Primalia* are essentially to be regarded as aggregations of cells entirely capable of nutrition and propagation, or increase, but without any part of their structure being traceable as vascular in any degree. These organisms are the primary forms of life and organization, and have not the distinctive characters or "super-additions," as termed by Professor Owen, of London, of either plants or animals. "When a certain number of characters concur in the same organism," says that learned gentleman, "its title to be regarded as a 'plant,' or an 'animal,' may be readily and indubitably recognized; but there are very numerous living beings, especially those that retain the form of nucleated cells, which manifest the common organic characters, but without the distinctive superadditions of either

kingdom. Such organisms are the *Diatomaceæ*, *Desmideæ*, *Protococci*, *Volvocinæ*, *Vibriones*, *Astasiæa*, *Thalassicolæ* and *Spongiæ*, all of which retain the character of the organized fundamental cell, with comparatively little change or superaddition."—(Hunterian Lectures, p. 8, London, 1855.)

It is, in our opinion, quite expedient and reasonable to inquire whether either of the groups here mentioned, or any other, *can* possibly belong to the Animal or Vegetable Kingdom, without possessing "the distinctive superadditions of either." The indication in our opinion, is quite clear that these groups really do not belong to either, but to a third kingdom, not possessing, and definable without, those superadditions, and which we have above designated. In his "Palæontology," a work of later date than that just quoted, Professor Owen seems to have finally concluded that the forms mentioned in the above citation do not belong to either of the kingdoms *Animalia* or *Vegetabilia*, and consequently he groups them into a kingdom for which he adopts the name *Protozoa*, (from Professor Goldfuss, Handbuch der Zoologie I. p. xi. Nurnberg, 1820,) and says, "But the two divisions of organisms called 'plants,' and 'animals,' are specialized members of the great natural group of living things, and there are numerous beings, mostly of minute size, and retaining the forms of nucleated cells, which manifest the common organic character, but without the distinctive superadditions of true plants or animals. Such organisms are called '*Protozoa*,' and include the Sponges or *Amorphozoa*, the *Foraminifera* or Rhizopods, *Polycystineæ*, the *Diatomaceæ*, *Desmidiæ*, *Gregarinæ*, and most of the so-called *Polygastria*, of Ehrenberg, or infusorial animalcules of older authors."—(Palæontology, p. 4, and Index, p.v.)

The very appropriate term *Protozoa* is admissible for the group designated by Professor Owen, though the group or kingdom is very much restricted by him, and different from the group defined by Professor Goldfuss, and of entirely different grade or value. The latter learned naturalist divides all organized beings into two sections, which he does not name, but which are the same as the divisions now well known as the *Vertebrata* and *Invertebrata* of Cuvier. He arranges the whole into eleven classes, of which *Protozoa* is the first, and *Mammalia* the eleventh class. The division of the class *Protozoa* is into four orders, *Infusoria*, *Phytozoa*, *Lithozoa* and *Medusinæ*, which embrace sixteen families, or four families each, and include in the aggregate what must now be regarded as a very heterogeneous group, properly to be distributed into all three of the organized kingdoms. The *Protozoa* are regarded by Professor Goldfuss as true animals. Professor Owen adopts the name for his group as restricted, quite properly, according to the usages of naturalists, the whole of it having been previously included in his class *Protozoa* by Professor Goldfuss.

We have been thus particular in alluding to the term *Protozoa*, admitting its excellence, and willing to express freely our regret that we do not consider it proper to adopt it as the name of our first kingdom, on account of its having been applied originally to a group very different in all particulars. The kingdom now proposed by us, and which, in our opinion, is a natural and primary division, is composed of the following inferior groups:

1. Kingdom Primalia.
   1. Sub Kingdom Algæ.
   2. " Lichenes.
   3. " Fungi.
   4. " Spongiæ.
   5. " Conjugata.

All of these groups are composed of organisms which are non-vascular and without organs of Respiration or Circulation; and the kingdom *Primalia* contains all such organisms known to exist in Nature. But a comparatively small number of those belonging to our group *Primalia* are arranged by Professor Goldfuss in his Class *Protozoa*, but we regard it as containing the whole of the

Kingdom *Protozoa* of Professor Owen, and other large groups, as above designated.

The evident and insurmountable difficulty in arranging well known groups of inferior organization on the preconceived idea of the existence of two kingdoms only, and that those inferior groups must belong to one or the other, has led several naturalists into suggestions and propositions relating to a third kingdom, or other group of high grade. Usually, and, in fact, in nearly all instances, those suggestions take the form of mere intimations, or rather doubtfully expressed opinions that a third group is possible, and in the large majority of cases the intimation relates to the supposed existence of forms and groups intermediate between animals and vegetables. Occasionally doubts are clearly stated as to the propriety of regarding some specified forms as belonging to either of the two great groups commonly received, and in a few cases the division of organized nature into three great primary groups, or kingdoms, has been proposed and presented in detail.

The proposition of M. Bory de Saint Vincent is one of the most clearly defined. That distinguished naturalist, in "Dictionnaire Classique D'Histoire Naturelle," (vol. viii. p. 246,)* establishes an additional intermediate kingdom which he denominates "Regne Psychodiaire," and gives his conclusions on the existence of this third, but intermediate, kingdom in a very lucid and satisfactory manner, and with entirely judicious and proper minuteness of detail on such an important proposition. His views are mainly based on the fact that some organisms assume, at periods or stages of their existence, characters of both animals and vegetables, or, as he expresses himself, even of animals and minerals. He says: "Tous ces êtres qui sont à la fois, des Animaux, des Plantes ou des Minéraux, et qui ne peuvent conséquemment rentrer d'une manière exclusive dans l'un des trois règnes adoptés jusqu'ici, ne doivent-ils pas former un règne nouveau dont plusieurs naturalistes ont déjà réclamé l'établissement, et que nous avons le premier proposé de fonder sous le nom de Psychodiaire." In volume xiv. of the same work, (Dictionnaire Classique,) M. de Saint Vincent fully defines and expresses his conclusions in relation to his proposed new kingdom, (p. 329). He divides it into three classes, to which he applies the names "les *Ichnozoaires*, les *Phytozoaires* et les *Lithozoaries*," the first of which groups embraces "les Polypes nus de Cuvier," and the second and third, the groups of organisms previously known as *Zoophytes* and *Lithophytes* as his proposed names indicate. Mainly the kingdom *Psychodiaire* of M. de Saint Vincent is identical with the Class *Protozoa*, of Prof. Goldfuss and subsequent authors, the difference being essentially that the former regards his proposed kingdom as a great group, equal in grade to the kingdoms *Animalia* and *Vegetabilia*, and intermediate between the two, while the latter regards his group only as a class of the Animal kingdom, and the first and least complex in organization of his eleven divisions of the grade of classes.

This is, so far as our knowledge extends, the first arrangement or classification in Natural History in which three primary groups of organized beings are distinctly proposed. M. de Saint Vincent also proposes an additional inorganic kingdom, which he names the "Règne Etheré."

In an article in the "Edinburgh New Philosophical Journal," vol. xii. new series (p. 216,) "On the distinctions of a Plant and an Animal, and on a fourth kingdom of Nature," by Mr. John Hogg, a British Naturalist, who has devoted much attention to the lower organisms, that gentleman proposes the name "*Primigenum*" for the group established by Professor Owen, under the name "*Protozoa*." He does not, however, propose any change in the classes,

*The date on the title page of this volume is 1825, but it is quoted and referred to by M. de Saint Vincent himself in Encyclopedia Methodique, supplementary volume on "Hist. Nat. des Zoophytes," which is dated 1824 (p. 657). His views are most fully expressed subsequently, in Dict. Class., vol. xiv. p. 329 (1828).

or other constituent groups of the "Kingdom *Protozoa*," as defined by Professor Owen. He says: "The word *Protozoa*, i. e. first or early animals, which was formed by a foreign naturalist, can alone include those that are admitted by all to be animals, or *zoa*, which are already members of and included in the kingdom Animalia, and not those concerning which it is doubtful whether they be not rather plants, or *phyta*." The "*Reguum Primigenum*," according to Mr. Hogg, contains "all the lower creatures, or the primary organic beings—'*Protoctista*'—both *Protophyta*, or those considered now by many as lower or primary beings, having more the nature of plants, and *Protozoa*, or such as are esteemed as lower or primary beings, having rather the nature of animals" He alludes, however, exclusively to the groups mentioned by Professor Owen, previously cited in this paper as constituting his "Kingdom *Protozoa*."

The idea of intermediate groups partaking of the nature of both animals and plants has been very extensively entertained, and from it seems to have originated such terms as *Zoophyta*, *Phytozoa*, and others of similar meaning, adopted from ancient authors. Generally, however, in the older authors the allusion is mainly to *forms* only as intermediate, but there are numerous expressions in the works of naturalists of all times, which show a suspicion that organisms exist which are not to be regarded properly as either animal or vegetable in their structure and nature. The well known expression of Pliny is to this purpose: "Equidem et his inesse sensum abitror, quæ neque animalium, neque fructicum, sed tertium quamdam ex utroque naturam habent: urticis dico et spongiis." (Nat. Hist., Book ix. chap. 68.) This paragraph has attracted much attention.

The great descriptive and literary naturalist, Buffon, frequently expresses opinions on this subject, from which are the following:

"Mais, comme nous l'avons déjà dis plus d'une fois, ces lignes de séparation n'existent point dans la Nature, il y a des êtres qui ne sont ni animaux, ni végétaux, ni minéraux, et qu'on tenteroit vainement de rapporter aux uns ou aux autres;" . . . . "comme on veut absolument que tout être vivant soit un animal ou une plante, on croiroit n'avoir pas bien connu un être organisé si on ne le rapportoit pas à l'un ou à l'autre de ces noms généraux, tandis qu'il doit y avoir, et qu'en effet il y a une grande quantité d'êtres organisés qui ne sont ni l'un ni l'autre." (Vol. iv. p. 252, Paris, 1776.)

This celebrated author previously had expressed himself in a manner generally coinciding and consistent with the preceding paragraph. We cite earlier passages from the same volume, not only for our present purpose, but incidentally, as singularly illustrative of the very small progress on this subject from that time to the present:

"Cet examen nous conduit à reconnoître évidemment qu'il n'y a aucune différence absolument essentielle & générale entre les animaux & les végétaux, mais que la Nature descend par degrés & par nuances imperceptibles d'un qui nous paroît le plus parfait à celui qui l'est le moins, & de celui-ci au végétal." (Vol. iv. p. 8.)

"On peut donc assurer avec plus de fondement encore, que les animaux & les végétaux sont des êtres du même ordre, & que la Nature semble avoir passé des uns aux autres par des nuances insensibles, puisqu'ils ont entr'eux des ressemblances essentielles & générales, & qu'ils n'ont aucune différence qu'on puisse regarder comme telle." (Vol. iv. p. 9.)

The learned Daubenton also has occasional or incidental observations of a similar purport, the following of which is one of the most remarkable:

"Les polypes, l'acétabule, les animaux des infusions n'ont-ils pas une organisation assez différente de celle de la plupart des animaux pour avoir un autre nom? Les conserves, les champignons, les moisissures, les lichens sont-ils de vraies plantes? Je pourrois rapporter ici beaucoup d'autres observations qui tendent à prouver qu'il y a une très-grande quantité d'êtres organ-

[May,

isés que ne sont ni de vraies plantes, ni de vrais animaux. Ce n'est qu'à force d'observations et de méditations que l'on pourra distinguer clairement les vraies plantes et les vrais animaux des autres êtres organisés qui en diffèrent assez pour avoir une autre détermination et un autre rang dans la division méthodique des productions de la nature." (Séances des Ecoles Normales, tome v. p. 277.)

We cite these authors only for the general purpose of illustrating the usual style of the suggestions and opinions frequently to be met with. Purposely, at present, we do not extend extracts of this description, nor give any such from living authors.

On the LESTRIS RICHARDSONI of Swainson; with a Critical Review of the Subfamily LESTRIDINÆ.

BY ELLIOTT COUES, M.D., U. S. A.

In the year 1831, a Jäger was described and figured in the Fauna Boreali-Americana, under the name of "*Lestris Richardsoni* Swains." This bird has been generally supposed to be the true *parasitica* of Brünnich, in the now well known *fusco-unicolor* state of plumage which all the species of *Stercorarius* pass through in arriving at maturity. Consequently, the name "*Richardsoni*" has been employed for the common Jäger, especially by American writers, to the exclusion of the prior name "*parasitica*," of Brünnich.

Examination of the works of Temminck, who, at the time in which he wrote, probably knew more about Jägers than almost any author, will show how this misapplication of a name became general.

In his edition of 1820, he is acquainted with but a single species of *Lestris*, (besides *catarractes* and *pomarinus*,) which he calls "*parasitica* Brünn." His description of the latter is made up of a mixture of the characters of *parasitica* and *Buffoni*; and the synonyms of the two are indiscriminately adduced.

In his edition of 1840, he recognizes the distinctions between the two species *parasitica* and *Buffoni*; but, unfortunately, he calls the true *parasitica* "*Richardsoni*," adducing the proper synonyms of the species under that name; while he describes the true *Buffoni* under the name of "*parasitica*." He is thus fully aware of his mistake of 1820; for (page 498) he makes the following "*Remarque*: Comme notre article du stercoraire parasite ou labbe du manuel p. 796, renferme, ainsi qu'il vient d'être dit, les synonymes de deux espèces distinctes, (le stercoraire à filets subulés courts, et le stercoraire à longs filets,) il est necessaire de refaire en totalité toutes les indications sur ces deux espèces."

But, believing Swainson's bird to be the same as the *parasitica*, he says (page 492), in defence of the nomenclature adopted: "Shortly after the publication of the second edition of the Manual, of 1820, we became aware of the error in our article on *Lestris parasitica*, where the description and synonymy of two distinct species are confounded. Guided by Boie's observations, we had applied the name *parasitica* to the small Jäger with short tail feathers, proposing to adopt for the one with long tail feathers (the labbe à longe queue of Buffon,) the name *Buffoni*; but since some English authors,* led into error by our article, have thought that they have discovered in our *parasitica* a new species, which they call "*Richardsoni*," we are obliged to adopt their mistake, sanctioned as it is by several naturalists, and in many collections. Being, then, confident that *Lestris Richardsoni* is really the same with our *L. parasitica*, with short tail feathers, . . . we adopt here the first of these names for the short-tailed Jäger, leaving to the long-tailed species

* i. e., Swainson, and others.